IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (ORIGINAL) An optical device comprising:

a branching filter which separates wavelength division multiplexed signal lights of a plurality of wavelength groups, into first wavelength groups and second wavelength groups consisting of wavelength groups which do not come into contact with the wavelength groups making up the first wavelength groups, on the wavelength axis;

a functional circuit that functionally processes the wavelength groups on a wavelength group-by-group basis of the separated first wavelength groups and second wavelength groups; and

a multiplexer connected to the branching filter through the functional circuit, for synthesizing the separated first wavelength groups and second wavelength groups.

2. (ORIGINAL) The optical device according to claim 1, wherein

the functional circuit makes level adjustment and dispersion compensation for each corresponding wavelength groups.

3. (ORIGINAL) The optical device according to claim 1, wherein

the plurality of wavelength groups each have optical signals of a plurality of different wavelengths, the plurality of wavelength groups being placed on the wavelength axis with a space for a plurality of wavelengths of the optical signals at every wavelength group-to-wavelength group.

4. (ORIGINAL) An optical device having an optical branching filter to separate the wavelength division multiplexed signal lights on a wavelength group-by-group basis, and an optical multiplexer functionally connected to the branching filter, for synthesizing the signal lights which have been separated on a wavelength group-by-group basis, wherein

the optical branching filter comprises:

a first branching filter that separates signal lights into first wavelength groups and second wavelength groups consisting of the wavelength groups that do not come into contact with the wavelength groups that form the first wavelength groups, on the wavelength axis;

a second branching filter that separates each of the separated first and second wavelength groups into signal lights having a plurality of different wavelengths included in the wavelength groups that make up each wavelength groups, and wherein

the optical multiplexer comprises:

a first multiplexer that synthesizes the signal lights separated by the second branching filter, for each of the first and second wavelength groups, sequentially into corresponding wavelength groups; and

a second multiplexer that synthesizes sequentially the wavelength groups making up the first and second wavelength groups synthesized by the first multiplexer.

5. (ORIGINAL) The optical device according to claim 4, wherein

the first branching filter and the second multiplexer are each formed from a plurality of circulator circuits that are connected in series, each having a fiber grating and a circulator to be provided so as to match individual wavelength groups, and wherein

the second branching filter and the first multiplexer are each formed from a plurality of dielectric multilayer film filters that are connected in series and provided so as to match the individual wavelength groups.

6. (ORIGINAL) An optical device having an optical branching filter to separate the wavelength division multiplexed signal lights on a wavelength group-by-group basis, and an optical multiplexer functionally connected to the branching filter, for synthesizing the signal lights which have been separated on a wavelength group-by-group basis, wherein

the optical branching filter comprises:

a first branching filter that sequentially separates the wavelength division multiplexed signal lights of even numbered or odd numbered wavelength groups on a wavelength group-by-group basis; and

a second branching filter that sequentially separates the wavelength division multiplexed signal lights of the odd numbered or even numbered wavelength groups corresponding to the remaining signal lights of the signal lights separated by the first branching

filter, on a wavelength group-by-group basis, and wherein

the optical multiplexer comprises:

a first multiplexer that sequentially synthesizes the signal lights of the odd numbered or even numbered wavelength groups separated by the second branching filter; and

a second multiplexer that sequentially synthesizes the signal lights of the even numbered or odd numbered wavelength groups separated by the first branching filter.

7. (ORIGINAL) The optical device according to clam 6, wherein

the first branching filter and the second multiplexer are each formed from a plurality of circulator circuits that are connected in series, each having a fiber grating and a circulator to be provided so as to match individual wavelength groups, and wherein

the second branching filter and the first multiplexer are each formed from a plurality of dielectric multilayer film filters that are connected in series and provided so as to match the individual wavelength groups.

8. (ORIGINAL) An optical device having an optical branching filter to separate the wavelength division multiplexed signal lights on a wavelength group-by-group basis, and an optical multiplexer functionally connected to the branching filter, for synthesizing the signal lights which have been separated on a wavelength group-by-group basis, wherein

the optical branching filter comprises:

a first branching filter that separates signal lights into the wavelength division multiplexed signal lights of the odd numbered wavelength groups and the signal lights of the even numbered wavelength groups; and

a second branching filter that separates the signal lights of the odd numbered and even numbered wavelength groups separated by the first branching filter, into respective wavelength groups, and wherein

the optical multiplexer comprises:

a first multiplexer that synthesizes the signal lights separated into the respective wavelength groups by the second branching filter, into the even numbered wavelength groups and the odd numbered wavelength groups, respectively; and

a second multiplexer that synthesizes the signal lights of the even numbered wavelength groups and the signal lights of the odd numbered wavelength groups synthesized by the first multiplexer.

9. (ORIGINAL) The optical device according to claim 8, wherein

the first branching filter and the second multiplexer are formed from interleaver filters, and wherein

the second branching filter and the first multiplexer are formed from a plurality of dielectric multilayer film filters that are connected in series and provided so as to match the individual wavelength groups.

10. (ORIGINAL) The optical device according to claim 9, wherein

the interleaver filter comprises a multistage connection of Mach-Zehnder type filters.

11. (ORIGINAL) An optical device having an optical branching filter to separate the wavelength division multiplexed signal lights on a wavelength group-by-group basis, and an optical multiplexer functionally connected to the branching filter, for synthesizing the signal lights which have been separated on a wavelength group-by-group basis, wherein

the optical branching filter comprises:

an optical isolator;

an optical coupler that branches into two the signal lights that have been wavelength multiplexed through the optical isolator,

a first fiber grating connected to one output of the optical coupler, for blocking the even numbered wavelength groups of the wavelength division multiplexed signal lights;

a second fiber grating connected to the other output of the optical coupler, for blocking the odd numbered wavelength groups of the wavelength division multiplexed signal lights;

a first separating filter that separates the signal lights of the odd numbered wavelength groups outputted from the first fiber grating to respective wavelength groups; and

a second separating filter that separates the signal lights of the even numbered wavelength groups outputted from the second fiber grating.

12. (ORIGINAL) The optical device according to claim 11, wherein

the first separating filter and the second separating filter are each formed from a series connection of a plurality of dielectric multilayer film filters.

13. (ORIGINAL) The optical device according to claim 6, wherein

the number of wavelengths included in the individual even numbered or odd numbered wavelength groups to be separated by the first branching filter is less than the number of wavelengths included in the respective odd numbered or even numbered wavelength groups.

14. (ORIGINAL) A wavelength division multiplexing communication system having a compensation node in the middle of the transmission path optical fiber to transmit wavelength division multiplexed optical signals, wherein

the compensation node comprises an optical device, the optical device having an optical branching filter to separate the wavelength division multiplexed signal lights on a wavelength group-by-group basis, having a function unit to make level adjustment and wavelength dispersion compensation for the optical signals of wavelength groups to be separated by the optical branching filter, and having an optical multiplexer to synthesize the signal lights that have been level adjusted and dispersion compensated by the function unit and separated on a wavelength group-by-group basis, and wherein

the optical branching filter includes a first branching filter to sequentially separate the wavelength division multiplexed signal lights of the even numbered or odd numbered wavelength groups on a wavelength group-by-group basis, and a second branching filter to sequentially separate the wavelength division multiplexed signal lights of the odd numbered or even numbered wavelength groups corresponding to the remaining signal lights of the signal lights separated by the branching filter, on a wavelength group-by-group basis, and wherein

the optical multiplexer includes a first multiplexer to sequentially synthesize the signal lights of the odd numbered or even numbered wavelength groups separated by the first branching filter, and a second multiplexer to sequentially combine the signal lights synthesized by the first multiplexer with the signal lights of the even numbered or odd numbered wavelength groups separated by the first branching filter.

15. (ORIGINAL) An optical device comprising:

a first branching filter to input wavelength division multiplexed signal lights and separate the signal lights into a first wavelength band and other wavelength bands;

a second branching filter to input lights separated into the other wavelength bands by the first branching filter, and separate the lights into a second wavelength band different from the first wavelength band and other wavelength bands; and

a second wavelength device to input the lights of the second wavelength band extracted by the second branching filter, the second wavelength device outputting at least the second wavelength band to the first multiplexer, wherein

the first multiplexer synthesizes lights separated into the first wavelength band by the first branching filter and the lights from the second multiplexer and outputs the synthesized lights.

16. (ORIGINAL) The optical device according to claim 15, further comprising:

a third branching filter to separate lights, at least, into a wavelength band lying between the first and second wavelength bands and other bands; and

a third multiplexer to input the lights of the wavelength band lying between the first and second wavelength bands separated by the third branching filter, the third multiplexer outputting at least the lights of the wavelength band between the first and the second wavelength bands to the second multiplexer, wherein

the second multiplexer synthesizes the lights of the second wavelength band from the second branching filter and the lights from the third multiplexer, and outputs the synthesized lights to the first multiplexer.